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September 22, 1956

VOL. 28, NO. 12

PAGES 177-192

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Hurricane Hunting

See Page 184

A SCIENCE SERVICE PUBLICATION

Kodak reports to laboratories on:

how to draw a crowd into a tent... a material to coat a pattern on metal... a pair of replacements for the orchard grass around the old apple tree

Slowdown in color

In the heat of debate we once heard an advertising man cry out, "What's a product? Anybody can make a product. The real art is selling a product."

Though since moved on to fields where his artistry could more lushly flower, he wasn't entirely wrong, just too sweeping in his value judgments. In the market place—particularly in the industrial market place—many a wonderfully ingenious and efficient product of the engineering mind and hand fails to ring the bell as loud and clear as expected, simply because too few potential customers know how the thing works. One way to draw a crowd into the tent for educational purposes is to show them movies. Showmanship isn't all; some mechanisms can be seen at work in no other way than through movies which slow down the action fifty times or more. Sometimes recognition of this is all the showmanship needed.

There was a time when these high speed movies were used only for development and trouble-shooting. Long miles of high speed film still quite justify themselves in the form of black-and-white rush negatives shown once to taut little engineering groups, but more and more high speed shooting is done on *Kodachrome Film* and even on *Commercial Kodachrome Film*, which is chosen only with advance knowledge that numbers of full-color copies will be required for circulation.

"High Speed Motion Pictures," a new booklet obtainable from Eastman Kodak Company, Sensitized Goods Division, Rochester 4, N. Y., tells about the Kodak High Speed Camera and about the films spooled for this kind of movie making.

Mr. Gabler beats the glue

You should see what a fine job Bob Gabler has been doing lately in converting the steel industry over to

Kodak Photo Resist. Who is Bob Gabler? A man we keep in Pittsburgh to help work out any photographic ideas that come up in the various industries there. What is *Kodak Photo Resist*? A liquid which quickly hardens to a tough, tenacious coating on metal, but only in areas where bright light has hit it before flushing with a certain solvent called *Kodak Photo Resist Developer*.

Before Mr. Gabler showed *Kodak Photo Resist* to the men who make the tensile measurements on sheet steel, they had mostly been using old-fashioned bichromated glue as the light-sensitive substance for photographically printing a measurement grid onto their samples before deformation. Bichromated glue is not nearly as light-sensitive as *Kodak Photo Resist*, but more annoying to the steel testers is its tendency to flake off in the test instead of stretching with the metal the way a grid pattern of *Kodak Photo Resist* does. Bob, of course, had no way of knowing in advance that *Kodak Photo Resist* would work out so well, since the product is one we thought we were making merely for photoengravers, photolithographers, and electronic-circuit printers. But when the steelmen called, he went in there pitching and everything turned out OK. That's what we pay him for.

If you have a problem for a Kodak Technical Representative like Bob Gabler or if you just want literature on Kodak Photo Resist, write Eastman Kodak Company, Graphic Reproduction Division, Rochester 4, N. Y.

Chicken economics

Even if your only relationship with chickens is to enjoy them fried or roasted, chicken economics is more interesting than you might think. No longer is the chicken the symbol of dietary luxury that it used to be when chickens lived on the crude scratch feed that the farmer's wife

threw them. Maybe the chicken is no healthier today than it was then, but the chicken business is healthier, and people can afford to eat its product on weekdays.

When the ratio of pounds of feed to pounds of marketable chicken is carried to two decimal places (as the ag schools do in teaching that new folkway, cost accounting), little room is left in the feed bag for certain protective substances that the chickens' free-running ancestors used to get from the orchard grass around the old apple tree. Such things the chemical industry now provides. Poets of pastoral bent may rankle, but certainly not the people who make the machines that cut the gears that go into the automatic transmissions that drive the station wagons that successful farmers now buy. And chicken sandwiches taste better than ever.

As part of the chemical industry, we not only make real vitamin E for feed manufacturers in a form more than 200 times as concentrated as found in dried orchard grass, but now we have launched *Tenox BHT, Agricultural Grade* to preserve and extend whatever vitamin A and vitamin E are already present in natural feed materials. This butylated hydroxytoluene has emerged victorious as a chemical anti-oxidant of unassailable safety even in human food. Now it is for the feedmen, the poultry growers, and their academic advisors to decide merely how much protection from what business risks is worth how much cash outlay.

Myvamax Vitamin E Feed Supplement, commercial data about it, and a spate of scientific literature are obtainable from *Distillation Products Industries, Rochester 3, N. Y.* (Division of Eastman Kodak Company). *Tenox BHT, Agricultural Grade*, in the form of free-flowing, non-dusting granules of a particle size to assure rapid, permanent blending is now on sale by *Eastman Chemical Products, Inc., Kingsport, Tenn.* (Subsidiary of Eastman Kodak Company).

This is one of a series of reports on the many products and services with which the Eastman Kodak Company and its divisions are... serving laboratories everywhere

Kodak
TRADE MARK

ASTRONOMY

Increase Telescopes' Power

An image converter, a device that will make a 20-inch telescope to which it is attached the equivalent in light-gathering power of the 200-inch, is being developed.

▶ A LIGHT-INTENSIFYING DEVICE that will allow man to look three times farther into space with the world's largest telescope, the 200-inch on Mt. Palomar, is now in the preliminary stages of development at Westinghouse Research Laboratories, Pittsburgh.

The biggest reflector will become the equivalent of a mirror 2,000 inches in diameter. This is made possible by an image multiplier that in six simple stages of electron enhancement will take the light of the Palomar telescope and increase it 10,000 to 20,000 times in brightness.

The volume of space to be reached will be some 27 times that now visible. This means that instead of being able to see back two to three billions of years in light time travel with the 200-inch, astronomers will probe six to nine billions of light years. (See SNL, Dec. 17, 1955, p. 389.)

Most important to theories of the constitution of the universe will be new knowledge of the distribution of the galaxies in distant space. Perhaps the moot questions of whether there is an end to space or whether space bends back upon itself will come closer to solution.

It will be at least several years before the device being pioneered by Dr. E. J. Sternglass and Milton Wachtel will be attached to the 200-inch telescope. (See SNL, Jan. 21, p. 35.)

However, a model has been built and the principles seem quite clearly worked out. Light is picked up on an electronic screen that gives out four electrons for every one that hits it. This is repeated in six stages.

An early development of the device will probably be used on smaller telescopes in connection with the International Geophysical Year.

Devices related to the image multiplier will give more ability to see in the dark. They will have military and security applications. Such a device should be able to watch an area at night without lighting it, and military movements could be spotted at night from the air despite darkness that prevents ordinary photographs.

Also announced by the scientists at the new laboratory was development of an electronic "brain" that promises to result in major changes in the control of complex industrial processes.

Called Automex, the "brain" has a built-in method of distinguishing between the most promising and the least promising choices, Dr. Morris Ostrofsky, manager of the mathematics department, said.

The key to Automex's function is that it will, by repeated experimentation, try to reach a given goal with dispassionate judg-

ment in distinguishing between success and failure, Dr. Ostrofsky reported.

Dr. Robert Hooke created a mathematical scheme for accomplishing the design of Automex, and Albert Kerstukos of the Westinghouse new products department designed and built the model.

In one application, Automex would be useful to a chemist who is adding two or more solutions together to obtain a reaction in a heated container. The Automex would enable him to find out how changes in the temperature or certain amounts of the solutions would affect the reaction.

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PUBLIC HEALTH

Milkman to Bring Safe Water in Mass Disasters

▶ IN CASE FLOODS or other disasters knock out a town's water supply system, the milkman will come to the rescue, bringing safe drinking water packaged in milk containers.

Plans for this were announced by Federal Civil Defense Administrator, Val Petersen.

The plan originated, apparently, when Hurricane Diane hit Stroudsburg, Pa., in August, 1955, bringing torrential floods that put the water plant out of commission. Local civil defense authorities called the Lehigh Valley Cooperative Farmers Dairy in Allentown, Pa., asking for milk cartons.

The Lehigh group responded by sending cartons filled with pure drinking water to avoid contamination. The Lehigh group did this by simply switching their dairy from packing milk to packing water. The same machinery was used.

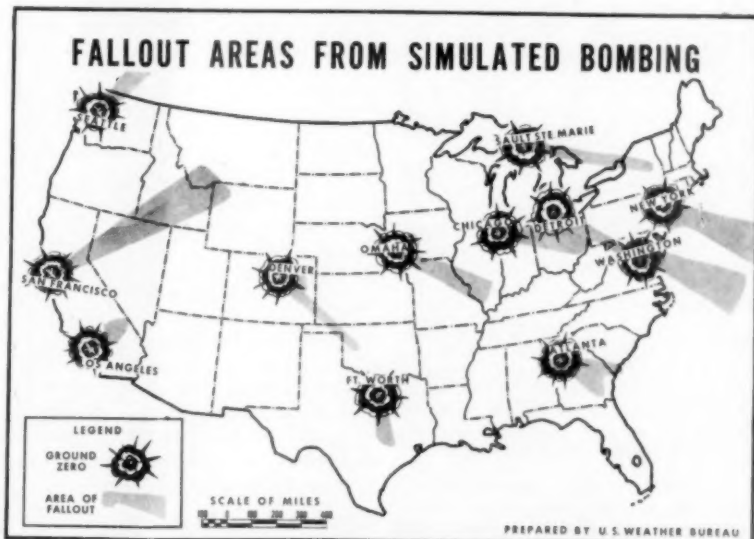
Following this successful experiment, FCDA consulted the U. S. Public Health Service, American Red Cross, and the milk and dairy and container industries. The result is the new plan.

It proposes that, in any emergency, dairies in areas affected would package water in containers usually used for milk for shipment by air, rail, truck or water to the disaster regions.

It would be the responsibility of the civil defense director in any community where the water supply was knocked out to determine the need for drinking water and the amount required. He would appeal to the nearest dairies still in operation and make arrangements for packaging and shipping the drinking water to his community.

Several companies are using hand stamps, special caps or inserting the regular cap upside down to identify the specially-packaged water.

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FALLOUT MAP—Assuming 12 cities were hit simultaneously with hydrogen bombs early on Sept. 10, 1956, the resulting fallout of radioactive particles within the 12-hour period following the bursts would have covered the areas shown shaded in this map prepared by the U. S. Weather Bureau as a special feature of Civil Defense Week. Strong northwesterly winds aloft in the eastern part of the U. S. would carry bomb debris from Detroit to the Washington area within half a day.

ANTHROPOLOGY

Andean People Studied

► AN ISOLATED GROUP of from 1,700 to 1,800 dwarfed people living on a subsistence basis in an "area God forgot" high in the Peruvian Andes has been visited and studied by a party of American and Peruvian scientists.

The Indians, whose language is the ancient Quechua, were found to be loaded with parasites and plagued with nutritional deficiencies. They live mostly on corn and potatoes, and have practically no fats.

The potatoes are stunted, the largest being barely as large as a golf ball. The corn is stunted. And the people are stunted.

The average adult man is less than five feet, one inch in height and he weighs only 114 pounds.

Nevertheless, the people have adapted well to the altitude of 10,000 to 11,000 feet. They have tremendous chests that allow them to take in enough oxygen for the heavy work they do.

They customarily trot along the difficult mountain trails carrying heavy burdens and, occasionally, for sport, stage "potato races" in which the big-chested little fellows run down a trail, each with a 150-pound sack of potatoes on his back, trying to see which man will reach the goal first.

The Indians live on a huge hacienda, or farm, of 36,000 acres belonging to the Peruvian Government, rented by Cornell University for research and technical assistance. Part of the area is above the tree line. The soil is poor and often thin where erosion has washed it away.

The people struggle under a 16th century feudalism originally imposed upon them by the Spanish Conquistadores. The scientists found evidence indicating the people, even in prehistoric times, were living on a subsistence level.

The work of the scientists has been co-ordinated by Dr. Marshall T. Newman, associate curator of physical anthropology at the Smithsonian Institution.

Accompanying him on the expedition were Dr. Carlos Collazos, head of the department of nutrition of Peru's Ministry of Public Health; Dr. Ramon Vallenar, sub-director of the Peruvian Department of Industrial Hygiene; Dr. Fred H. Allen Jr., associate director of the Blood Grouping Laboratory, Boston; Srta. Carmen Caceres, a dietician; Dr. William C. Blanchard, field director of the project, and his staff from Cornell University, and Sr. Hector Martinez of the University of San Marcos.

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ASTRONOMY

Plan Observing Satellite

► A DRESS REHEARSAL for amateur astronomers observing the earth-circling satellites during the International Geophysical Year will be held in the United States within the next three months.

Plans for the dry-run practice tracking of moonlets sometime in the very near future were announced in Barcelona, Spain, by Dr. Fred L. Whipple, Harvard University astronomer and director of Smithsonian Astrophysical Observatory, which is in charge of visual observations of the satellites. This program is called Moonwatch.

The "invaluable" practice Moonwatch will also provide the "first, large-scale" search for any possible undiscovered natural earth satellites, Dr. Whipple told the international meeting of about 300 scientists, gathered in Barcelona to make final plans for the International Geophysical Year.

IGY, in which about 50 nations will participate, is a world-wide study of the earth, its seas and its atmosphere.

Dr. Whipple also issued an invitation to astronomers of all countries, including Russia, to cooperate in the optical tracking program.

This, he said, was divided into three phases:

1. A photographic program involving the use of especially designed, wide-eyed Schmidt cameras placed at 12 or more stations around the world.

2. A visual observation program, involving volunteer groups of observers over the world, using simple optical aids to locate each satellite launched, of particular value in the beginning and final stages of any satellite's life.

3. A professional astronomers' program, using special equipment in observatories.

A central computing bureau is being set up in Cambridge, Mass., Dr. Whipple said, to provide immediate analysis of both precision photographic and approximate visual observations from which will be made predictions of the paths to be taken by the satellites. The high-speed electronic computer will also be used to analyze the combined observations for geophysical and astronomical results.

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GEOPHYSICS

Very Large Sunspot Bursts Forth on Sun

► THE BIGGEST SUNSPOT to burst forth on the solar surface in several years was recently followed with interest by scientists around the world.

The gigantic whirlpool of extremely hot gases appeared black only by contrast with its fiery surroundings. The sunspot was "by far" the largest to appear during the

current sunspot cycle, which started a swing toward peak activity three years ago.

Several planets the size of earth could easily be contained within the spot.

National Bureau of Standards experts, who use sunspot activity in making day-by-day predictions of shortwave radio reception, reported the spot was at the sun's center on Sept. 12.

The sun is now heading into a high point in its approximately 11-year cycle of activity. The International Geophysical Year, which starts next July 1, was timed to coincide with this sunspot maximum, if possible.

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SCIENCE NEWS LETTER

VOL. 70 SEPTEMBER 22, 1956 NO. 12

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, INC., 1719 N. St., N. W., Washington 6, D. C. North 7-2255. Edited by WATSON DAVIS.

Subscription rates: 1 yr., \$5.50; 2 yrs., \$10.00; 3 yrs., \$14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

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Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C., under the act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for by Sec. 3440, P. L. and R., 1948 Edition, paragraph (d) (act of February 26, 1925, 39 U. S. Code 263) authorized February 28, 1950. Established in mimeographed form March 13, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Reader's Guide to Periodical Literature, Abridged Guide, and the Engineering Index.

Member Audit Bureau of Circulation Advertising Representatives: Howland and Howland, Inc., 1 E. 34th St., New York 22, Eldorado 5-5665, and 435 N. Michigan Ave., Chicago 11, Superior 7-6048.

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GEOPHYSICS

Sun Has Weak Magnetic Field

THE SUN has a weak magnetic field, measured at about one gauss, Dr. Horace W. Babcock of Mt. Wilson and Palomar Observatories, Calif., reports.

He confirmed this figure for the sun's general magnetic field in *Nature* (Sept. 8). In doing so, he differs with another prominent scientist, Dr. H. Alfven, who believes that present methods of measurement are not sufficiently precise to show the amount of the sun's magnetism.

Both scientists agree, as has been known for many years, that sunspots often have strong magnetic fields. What they disagree about is the background, over-all solar magnetic field.

Dr. Babcock's measurements of this field are made daily, weather permitting, with a solar magnetograph at the Mt. Wilson Observatory. A gauss is the unit used by scientists to measure magnetic induction. (See SNL, Feb. 27, 1954, p. 132.)

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PHYSIOLOGY

Two-Thirds of Dust Breathed Stays in Lungs

➤ ALMOST TWO-THIRDS of the dust taken with each breath of air may stay in the lungs. Also, breathing characteristics may determine how much dust is taken into the lungs.

These findings, with their implications for problems of air pollution, radioactive fallout and the so-called dusty trades, were reported by Drs. P. E. Morrow, D. A. Morken, L. J. Casarett and E. Mehrhof of the University of Rochester School of Medicine and Dentistry at the American Physiological Society meeting in Rochester, N. Y.

In their studies, human volunteers breathed air containing harmless dust in particles too small to be seen with a microscope. The dust in each person's breathing tract was then measured.

For the particular dust used in the studies, almost two-thirds of that breathed in stayed in the respiratory tract. This is a much higher value than can be estimated from existing relationships between particle size and deposition.

The frequency of taking breaths, the amount of air moved by a single breath and the air flow rate of breathing are related to the quantity of dust deposited, the scientists found.

This means it may be possible to estimate a person's susceptibility to getting dust in his lungs, which would be helpful in connection with working in dusty industries.

The same harmless dust used in the human studies is now being used in animal studies. The scientists hope through this to be able to extend the studies to learn more about dust contaminated with radioactive substances and its deposition in the lungs.

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HEAT-RESISTANT ELECTRONICS—In this side-by-side comparison an ordinary electronic circuit is shown with a new General Electric high-temperature circuit after being placed in an electric oven at 1,500 degrees Fahrenheit. The ordinary circuit has disintegrated, but the new one has operated at this high temperature for thousands of hours.

TECHNOLOGY

High-Temperature Devices

➤ THE ELECTRONIC AGE can now run "red hot" since electronic devices and circuits have been developed that operate successfully at 900 to 1,500 degrees Fahrenheit. This is far above the 200-degree upper-heat limit of most conventional electronic equipment.

Most immediate consequence of the new General Electric development is that guided missiles and supersonic aircraft will be able to surmount the heat barrier encountered at high speeds and altitudes.

Ultra-speed planes now have to carry weighty cooling apparatus to counteract skin-sizzling heat generated by air friction at high speeds. Both electronic gear and pilots must be kept cool enough to operate. With tubes and circuits that stand such heat, the "brains" to run planes and missiles can be entirely electronic without worry about cooling.

The new electronic circuits will also operate for periods of up to 1,000 hours while exposed to intense nuclear radiation in an atomic reactor.

Inside glowing electric furnaces and surrounded by blazing blowtorches, General Electric's new vacuum tubes, capacitors, resistors, transformers, inductors, wires, printed circuit boards, and even an electric motor, operate at temperatures ranging from 900 to 1,500 degrees Fahrenheit. Metals

such as titanium and special laboratory-designed ceramics play important roles in the design and construction of high-temperature components.

An ordinary electronic assembly, placed in an oven alongside a new high-temperature circuit, stops working immediately and melts into a puddle of metal and glass.

"Heaterless" tubes at the high temperatures do not need the power supply that is normally required to heat the filaments in vacuum tubes.

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MARINE BIOLOGY

Marine Borers Riddle Lead Telephone Cable

➤ MARINE BORER MOLLUSKS are now known to attack lead as well as the wood, fibers, rocks and shells that they usually riddle with troublesome holes.

Damage to lead-sheathed submarine telephone cable in service since 1927 in the Ortega River, Jacksonville, Fla., was traced to mollusks of the *Pholadidae* family, by L. R. Snoke of Bell Telephone Laboratories and A. P. Richards of William F. Clapp Laboratories, Duxbury, Mass., who report their work in *Science* (Sept. 7).

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SURGERY

Fit Babies With Artificial Limbs

► THE CASE of a 32-month-old baby who expertly uses an artificial leg and a small hook for a hand and who "vociferously resented" having them taken off was reported at the International College of Surgeons meeting in Chicago.

The little boy was born with several deformities. At the age of 10 months he was provided with a jointless pylon, or peg leg, and a passive hand. When he was 23 months, he was given a fully jointed artificial leg and the small hook.

His case was reported with other similar cases by Drs. Robert Mazet Jr. and Milo B. Brooks of the University of California School of Medicine, Los Angeles.

These and other cases show that rehabilitation can be started at an early age, and that many more children can now be fitted with artificial arms and legs than formerly was possible.

"Children commence standing and walking about the end of their first year," they said. "They should be given something to stand on. Initially, this may be a jointless pylon. When good balance is attained, an ankle can be added and, at about three, they can probably operate a knee joint."

"In the upper extremity, children under a year can push and pull only, so the infant passive hand is used. The mother can preset a passive elbow."

"At about two and one-half, children will have developed sufficiently to operate a small hook. Two-handed activities away from the body are thus provided. Not until he approaches four is the child able to understand the mechanics of and actively use a fully functioning prosthesis."

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PHYSIOLOGY

Danger in Pre-Birth Sex Determinations

► AN UNBORN BABY faces a "definite risk" if a needle is stuck into the sac around it to get fluid for learning months before birth whether the baby will be a boy or a girl.

The risk is that of killing the unborn infant or damaging it so that it will be born with cleft palate or other abnormality. This risk is especially great if the attempt to get the amniotic fluid surrounding the baby in the womb is made early in pregnancy.

Tests with mice showing that this risk is real are reported by Drs. Daphne G. Trasler, B. E. Walker and F. C. Fraser of McGill University, Montreal, in *Science* (Sept. 7).

Of 14 expectant mother mice, six lost their litters. In the remaining eight litters, 10 out of 17 embryos that survived had cleft palates, whereas the palates of the 15 control embryos were closed.

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RUSSIANS ATTEND CONFERENCE—Three delegates from the U.S.S.R. Institute of Ethnography are shown here photographed when they attended the recent Fifth International Congress of Anthropological and Ethnological Sciences in Philadelphia. Examining an African tribal mask are, from left to right, Drs. G. F. Debets, D. A. Oldergoge and I. I. Potekhin.

ANTHROPOLOGY

Neanderthaloid Man

► NEANDERTHALOID MAN lived on earth much more recently than scientists have previously known, Father J. Franklin Ewing, S.J., Fordham University anthropologist, reported at the International Congress of Anthropological and Ethnological Sciences in Philadelphia.

He announced the finding of an upper jaw bone fragment 15 yards under the soil surface in Ksar 'Akil on the outskirts of Beirut, Lebanon. The bone is distinctly Neanderthaloid, Father Ewing concludes.

"There can be no question," he said, "that the Ksar 'Akil fragment is later than the skeletal material from Mt. Carmel."

Above the Neanderthaloid remains at a depth of about 12 yards, Father Ewing found human remains of a young boy of Aurignacian period.

Father Ewing has given this long-dead boy the name Egbert.

Egbert lived about 20,000 years ago and his remains are the oldest completely modern human bones ever found in that Near East country.

Egbert's bones were found with manufactures in a direct line of descent from the similar industry associated with the Neanderthaloid jaw bone fragment. This, in turn, seems to be derived from the kind of activity of the Mt. Carmel Man.

Father Ewing was working at the Ksar 'Akil site when he was interrupted by the

outbreak of World War II. He was returning to the United States by way of the Philippine Islands when he was captured by the Japanese and spent almost five years in a concentration camp.

After being released in 1945 and then returning to Fordham University, Father Ewing went back to complete his anthropological work at Ksar 'Akil.

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ANIMAL PHYSIOLOGY

Frightened Bunnies Smell Fainter Odors

► A FRIGHTENED RABBIT may be able to detect strange odors at lower concentrations than the animal would if not frightened.

This possible self-preservation mechanism was detected by electronic equipment that picked up messages transmitted by smell nerves before the messages reached the brain.

Stimulating the nervous system to the nose, as fright would, increased the sensitivity of the receptor nerves, Drs. Don Tucker and Lloyd M. Baidler of Florida State University, Tallahassee, reported at the American Psychological Society meeting in Rochester, N. Y.

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PHYSICS

Anti-Neutron Discovered

► THE ANTI-WORLD of atomic nucleons is now complete. Discovery of the anti-neutron as a companion of the anti-proton, made in the University of California's world's largest operating atom smasher, completes the strange opposite realm where everything physical is in reverse.

For many months, the discovery of the anti-neutron has been expected, particularly since creation of the opposite of the proton, basic particle of ordinary matter. (See SNL, Feb. 18, p. 107.)

There is no practical consequence foreseen. Scientists understand matter a little better. If there were available large supplies of anti-matter, consisting of anti-protons and the now discovered anti-neutrons, gigantic amounts of energy could be produced by merely bringing them into contact with ordinary matter.

Perhaps great galaxies of anti-matter stars do exist far away in the distant universe. That is astronomical speculation. (See SNL, Sept. 1, p. 131.)

As it is, just a few anti-neutrons have been

created with great difficulty in the giant bevatron. It is a great achievement, not unexpected and latest in a series that arose out of the research that gave man atomic energy and promises to explore matter and energy even further.

Discovery of the anti-neutron was made by four University of California scientists, Bruce Cork, Dr. Oreste Piccioni, Dr. W. A. Wenzel and Glen R. Lambertson, working under Dr. E. J. Lofgren, physicist in charge of the bevatron.

Annihilation of a neutron by an anti-neutron releases several hundred times as much energy per unit as does the fusion reaction in thermonuclear explosions.

To find the anti-neutron, the scientists stepped up the bevatron's anti-proton production. When an anti-proton brushes quite close to a normal proton, but not close enough for annihilation, then the anti-proton turns over its charge, becoming an anti-neutron.

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ARCHAEOLOGY

Explore Bible City

► THE ANCIENT ISRAELITE CITY of Gibeon where, the Bible reports, Joshua caused the sun to stand still has been explored and definitely identified by a party of American scientists.

Positive identification of the ancient Biblical city was made through inscriptions bearing in ancient Hebrew letters the name Gibeon.

Most important find at the site was the famous Pool of Gibeon where the servants of Abner battled the men of Joab. This pool, which was probably constructed before 1200 B.C., held over 200,000 gallons of water.

Although the scientists dug debris out of the pool for seven weeks, they were unable to reach the bottom, but they followed a circular, stone-cut stairway down to a depth of 35 feet—42 steps.

This stairway followed the circular edge of the pool. A guard rail was cut out of the solid rock.

Safe access to the pool from inside the city wall was provided by a 170-foot long tunnel, well lighted by oil lamps placed in niches cut into the walls at regular intervals.

The 96 steps inside the tunnel, well worn with much traffic, were carved out of solid rock.

Gibeon is a place where many battles have been fought over the years. The scientists encountered sling stones from the period of David, shrapnel from the First World War and, as they worked, they could smell the burning powder from an Israeli border incident just a few miles to the south.



SAFE ACCESS—This tunnel provided safe access from within the city wall of the Biblical city of Gibeon to a spring outside the wall.

The party was led by Dr. James B. Pritchard of the Church Divinity School of the Pacific. The expedition was sponsored by this school and the University Museum, Philadelphia.

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PHYSIOLOGY

Main Heart Pump Acts Like Two Separate Ones

► DISCOVERY that the human heart's main pump operates as if it were made of two separate pumps was announced by Dr. Simon Rodbard of the University of Buffalo Chronic Disease Institute at the American Physiological Society meeting in Rochester, N. Y.

The heart's main pump is the chamber called the ventricle. Studies on man and animals, Dr. Rodbard reported, show that the ventricle contracts to pump out blood in two stages.

The largest part of the ventricle contracts first and provides the major impetus to the flow of blood. After an appreciable delay, the part of the ventricle known as the bulbus, which is adjacent to the outlet valve, contracts.

In this way, the bulbus usually helps to propel the blood forward. The bulbus, Dr. Rodbard pointed out, may be an important mechanism for the regulation of the amount of blood pumped by the heart.

In disease, however, the action of the bulbus may obstruct the flow of blood from the heart. This happens in certain types of blue-baby disease. The obstruction to flow may sometimes lead to heart failure.

Science News Letter, September 22, 1956

HEMATOLOGY

No Blood Need Till 10 Days After A-Bomb

► BLOOD, especially fresh blood with living platelets, will be needed about ten days after an atomic bombing of a community.

Before that, however, considerably less blood will be needed than has been used for the care of the wounded in conventional warfare, Dr. William H. Crosby of Washington, D. C., told the International Society of Blood Transfusion at its meeting in Boston with the American Association of Blood Banks.

"Because of the enormous number of casualties many of the most severely wounded who have the greatest need for transfusion will die before they can be recovered," Dr. Crosby said.

"Others will be given a low priority for treatment in order to save larger numbers of good-risk and fair-risk casualties."

After the tenth day, blood will be needed to salvage those with radiation disease who develop severe lack of the important blood platelets.

During the first two days after an atom bombing, plasma and plasma substitutes can be used instead of blood for a majority of patients requiring such support during resuscitation and operations.

The amount of blood that could be provided in such a disaster, Dr. Crosby said, will probably be limited by the capacity of the blood bank teams and by competition with more essential materials for space in transportation to the bombed area.

Science News Letter, September 22, 1956

BIOPHYSICS

Radioactive Stitches Check Bladder Cancer

► **NYLON SURGICAL STITCHES** encasing radioactive cobalt are helping patients with cancer of the bladder to survive with normally functioning bladders.

Of 22 patients treated this way, 16 are well and free from disease for periods of from three months to four years, Dr. Vincent Vermooten of the University of Texas Southwestern Medical School, Dallas, reported at the International College of Surgeons meeting in Chicago.

Five of the 22 patients have died, two from causes other than cancer. One is alive a year after the treatment, but is believed still to have cancer.

The radioactive cobalt in nylon stitches is used as a barrier to the spread of the bladder cancer without the need for removal of the bladder and consequent urinary crippling of the patient. Object of the treatment is to destroy the cancer at its outer margin.

"The main bulk of the tumor matters little. Only the cells at the periphery of the growth, the cells that are actually invading the tissue, are important," Dr. Vermooten said.

"If a barrier can be placed at that point, then what happens to the main bulk of the tumor is of no serious consequence as it is relatively harmless. Whether it sloughs off or is removed by diathermy at the time of surgery makes little difference."

Science News Letter, September 22, 1956

PSYCHOLOGY

Want Old Folks to Be Busy and Independent

► **COUNTRY PEOPLE**, at least in Pennsylvania, want their old folks to be self-sufficient, active in job and in the community, and independent financially and personally.

This is shown by interviews with 2,000 persons in a rural village and the surrounding township, constituting one adult member of 90.2% of all households in the region. The survey's results were reported to the American Psychological Association meeting in Chicago by Drs. Joseph H. Britton, William G. Mather and Alice K. Lansing of Pennsylvania State University.

Nearly half of those interviewed believe a person should work as long as he is physically able. One out of five of young people under 40 think people should retire at 60 or before, but only 7.5% of those who have already reached this retirement age are of the same opinion.

There are differences in opinion between the age groups on the question of whether the old person should live alone. Only 23.2% of the young people want the elderly person to live by himself, but 39.2% of the elderly themselves want to live alone.

A majority (68%) of the elderly believe

it is all right for an elderly person to remarry if he can find a suitable mate, but this opinion is almost unanimous (91.9%) among those under 40.

More than half (51.8%) of the young people believe that most grandmothers love their grandchildren, but the older people themselves are not so sure. Only 39.2% answer yes to this question.

More than half (57.1%) of young people think an older person should be active in the community, but 35.8% of the elderly know of no groups that would welcome them.

People in the better occupational groups and with more education feel that elderly people should seek professional help of minister or doctor to solve mental health problems. The less well educated and poorer people feel that their family and friends should look after the old folks.

Science News Letter, September 22, 1956

HEMATOLOGY

Blood Platelets Play Part in TB Genesis

► **PLATELETS**, colorless disks in the blood involved in blood clotting, "play an important role in the genesis of tuberculosis," Dr. Alfred L. Copley of Paris, France, reported at the International Society of Hematology meeting in Boston.

The primary reaction of animals against TB germs introduced into the bloodstream, Dr. Copley found, is a clot, or thrombus, formation of platelets stuck with the germs, and subsequent changes in the walls of small blood vessels.

Plasma from rabbits immunized against TB with BCG vaccine showed more stickiness of germs to platelets than plasma from nonimmunized rabbits. The same was true of human blood platelets and plasma. The stickiness is insignificant in blood serum, however.

The findings, Dr. Copley said, open a new field of study in immunology, or resistance, to disease as well as showing the importance of platelets in tuberculosis.

Science News Letter, September 22, 1956

METEOROLOGY

Hurricane Hunters Stay on Alert

See Front Cover

► **AS A VITAL PART** of the Joint Hurricane Warning Service of the U. S. Air Force, Navy and Weather Bureau, the Navy has been performing low-level hurricane reconnaissance since 1946.

Shown on the cover of this week's SCIENCE NEWS LETTER is a jet plane, the F2H-2P Banshee, from the Navy's light photographic squadron based on Florida's east coast. It is flying a high-altitude photo weather mission to obtain information on the tropical storms aimed at better understanding of their nature and paths.

Science News Letter, September 22, 1956

IN SCIENCE

GENERAL SCIENCE

Science Foundation Tells Of Government Science

► **THE FEDERAL GOVERNMENT** spends more than \$2,000,000,000 a year and directly employs more than 130,000 scientists on scientific activities in 38 agencies, a National Science Foundation survey indicates.

This immense program has evolved from isolated, small-scale and loosely knit programs located in a few bureaus to large-scale and highly organized programs spread through virtually all the cabinet departments and major independent operating agencies of the Government, the report states.

Industry and universities are doing research and development of importance to the Government through grants and contracts from Federal funds. New Government-financed research centers have been established, managed by industrial concerns and educational institutions.

The 349-page report is titled "Organization of the Federal Government for Scientific Activities." (See p. 188.)

Science News Letter, September 22, 1956

ENDOCRINOLOGY

Hormone Controls Red Blood Cell Formation

► **A HORMONE** from the pituitary gland controls production of red blood cells, at least in the rat, five scientists of the University of California, Berkeley, have discovered.

They are Drs. A. N. Contopoulos, D. C. Van Dyke, J. H. Lawrence, H. M. Evans and M. E. Simpson. Their new hormone was reported at the International Society of Hematology meeting in Boston.

The pituitary, a small gland buried at the base of the brain, has been called the master gland because its hormones affect so many other glands and body functions. It is the source of ACTH, the adrenal stimulating hormone famous along with cortisone for relief of arthritis.

The new-found hormone that stimulates red blood cell production is called the erythropoietic factor.

Powerful preparations containing this hormone have been prepared from sheep pituitary glands by methods similar to those used in preparation of ACTH. Further purification of the hormone to separate it from ACTH is now being attempted.

The hormone is effective in rats when given by mouth. It repairs anemia induced in rats by various means and, in normal rats, leads to an excessive number of red blood cells.

Science News Letter, September 22, 1956

E FIELDS

HEMATOLOGY

Choosing Blood for Emergency Transfusion

► IN AN EMERGENCY with a patient bleeding seriously, it is sometimes impossible to get enough of the right kind of blood for transfusion.

How to meet some of these situations safely with the wrong blood was reported by Dr. Ernest Witebsky of Buffalo at the meeting in Boston of the International Society of Blood Transfusion with the American Association of Blood Banks.

For the patient with the relatively uncommon AB blood group, it is theoretically possible to give blood of any group if it were not for the presence in the donor's blood of incompatible isoagglutinins. These substances, which can clump the patient's red cells, can be eliminated by titration of the donor's serum or by adding blood group specific substances or both.

In the case of men and boys who are Rh negative, and who have not previously had transfusions, Dr. Witebsky and associates have given as much as 10 to 20 pints of Rh positive blood before or during operations without any bad results. They do not do this over a longer period than three days, but do not hesitate to give any amount of blood needed in that time.

The patient might eventually develop antibodies to the Rh positive blood. Dr. Witebsky pointed out, however, that it is better to have a living patient likely to develop Rh antibodies than "an unsensitized one who could not be saved because of lack of blood."

Science News Letter, September 22, 1956

HEMATOLOGY

Regulator Drug Keeps Blood From Clotting

► FOR PATIENTS with coronary thrombosis and others needing treatment to prevent blood from forming dangerous clots in blood vessels, a new drug to be taken by mouth plus a regulator for it has been found.

Good results with the combination were reported by Dr. Charles E. Brambel of Notre Dame, Ind., at the International Society of Hematology meeting in Boston.

The anticlot drug is called Phenprocoumon or Marcumar. The regulator is Phytomenadione, or Konakion.

Small doses of Phenprocoumon given on two consecutive days have an anti-clotting effect lasting five to seven days, Dr. Brambel found. For long-term treatment he gives small daily doses. The sustained anti-clotting effect of this powerful drug does not lead to the dangerous condition of too-ready bleeding and hemorrhage if small

doses of Phytomenadione are swallowed with it. This regulating drug does not counteract the anti-clot effect too greatly, so the danger of clots is also missed.

Dr. Brambel has given the combination to 300 patients and studied the effect in periods ranging from one month to one year.

Hemorrhage when patients are getting anti-clotting, or anticoagulant treatment may be precipitated by stress, Dr. L. B. Jaques, L. M. Fisher and G. J. Mogenson of Saskatoon, Can., reported.

When rabbits were getting an anticoagulant, half of them died from hemorrhage when subjected to the stress of frostbite or of insulin shock or other stressful conditions.

Stress, the Canadian scientists think, may be the major factor in starting hemorrhage of patients getting anticoagulants.

Science News Letter, September 22, 1956

BOTANY

Taro Plants Help Trace Pacific Peoples

► THE ORIGIN of the Maori and other Polynesian people may be traced through a study of taro plants whose starchy tuberous rootstocks are the "potato" of the Pacific Islands, Dr. J. A. Rattenbury, botanist of Auckland University College, New Zealand, suggests in *Nature* (Sept. 8).

While a majority of the 60 taro varieties studied to date have a diploid chromosome number of 28, a 42-chromosome variety has been found in the Cavalli Islands under circumstances strongly suggesting it has survived there since the earliest known Maori settlement, Dr. Rattenbury reports.

In their island-to-island migrations, the Pacific races carried with them some cultivated food plants and established these plants in their new settlements.

Certain species of the taro plant are particularly suitable for tracing such movements because they do not flower readily in many localities and rarely, if ever, set viable seed.

They are propagated by cutting off the base of the rootstock, which is eaten, and then replanting the upper portion, which includes both roots and shoot. Because of this manner of asexual propagation, the chromosome number is likely to remain constant over long periods.

Japanese and Indian scientists have independently reported 42 chromosomes.

"With no evidence so far to the contrary," Dr. Rattenbury concludes, "it is not inconceivable that the New Zealand variety has derived from southeastern Asia by way of the Malayan Peninsula and the chain of islands to the south and east."

Dr. Rattenbury emphasized that it is too soon to make any sweeping conclusions about the original home of the Maori, but it may be possible through the study of taro, sweet potato and yam to trace this and other racial groups farther and farther back into prehistoric times.

Science News Letter, September 22, 1956

GENERAL SCIENCE

Government Widens Scientific Information

► THE GOVERNMENT has set up a new program to disseminate results of scientific research.

The program, called "Government Research Information," was announced by Dr. Alan T. Waterman, director of the National Science Foundation. It is designed to make the results of federally-supported basic scientific research that is unclassified more widely available to "scientists everywhere."

Three Government offices are supporting the NSF in the undertaking, which promises wider dissemination of some 20,000 unclassified technical reports resulting from Government-sponsored research each year. They are the Foundation's Office of Scientific Information, the Library of Congress and the Office of Technical Services of the Department of Commerce.

Specifically, the program is to assist any research scientist to:

1. Learn what unclassified scientific reports on Government research are being issued in his field of interest and how he can obtain them.

2. Obtain, on a subscription basis, a report-announcement service that automatically will keep him informed regarding the bulk of such reports in fundamental research and through which he can purchase copies of listed reports.

3. Obtain access to a well-catalogued reference collection of unclassified scientific reports on federally-supported basic research that he can consult much as he now consults books in a reference library.

Any research scientist anywhere in the world can have access to the three aids.

Science News Letter, September 22, 1956

HEMATOLOGY

Sees Way to Prevent Fatal Maternal Bleeding

► A WAY to prevent a major cause of death of mothers in childbirth, hemorrhage from the uterus, was reported by Dr. O. D. Ratnoff of Cleveland at the International Society of Hematology meeting in Boston.

This fatal hemorrhage is usually associated with a general tendency to bleeding, Dr. Ratnoff and others have observed.

In some patients, it may be associated with the acute development of a severe state of deficient fibrinogen in the blood. Fibrinogen is the chemical from which fibrin, essential portion of the blood clot, is formed. When there is too little fibrinogen, blood does not clot normally. Hemorrhage in various childbirth conditions may follow.

Diagnosis of the fibrinogen deficiency is not hard, Dr. Ratnoff said. If the condition is recognized early, suitable treatment with the fibrinogen fraction of blood, in addition to other measures, may be of value in preventing the fatal hemorrhage.

Science News Letter, September 22, 1956

ASTRONOMY

Receding Mars Brilliant

Although the "red" planet is drawing away from the earth, it is still the brightest object in the evening sky, except for the moon. Saturn and Venus may also be seen.

By JAMES STOKLEY

► **ALTHOUGH MARS** is rapidly drawing away from its close approach on Sept. 6, when at midnight EST it was only 35,120,000 miles from the earth, the planet still shines brightly in the evening skies of October.

Its position is shown on the accompanying maps, which depict the appearance of the skies as they look about ten p.m., your own kind of standard time, at the first of October, an hour earlier at the middle of the month and two hours earlier at the end. Mars stands in the constellation of Aquarius, the water carrier.

On Oct. 1 it has receded to a distance of about 38,800,000 miles, and because of this it is only about two-thirds as bright as at the closest approach.

By the end of October it will be less than a third as bright as then, for it will be nearly 53,000,000 miles away. Its magnitude of minus 1.3 on the astronomer's brightness scale will still make it brighter than any other star or planet in the evening sky.

Another planet, Saturn, is also in the October evening sky, although it sets earlier than the times for which the maps are drawn. About the first, it goes down two and a half hours after the sun, but at the end of October it follows that body below the horizon by a little more than an hour.

Saturn May Be Seen

Since its magnitude is 0.8, or like a typical first magnitude star, it may be possible to see Saturn if you look low in the west just after it gets dark.

Brightest star of the October evening is Vega, in Lyra, the lyre, high in the west. Directly above it is Cygnus, the swan, with the first-magnitude star called Deneb.

To the left of Lyra is Aquila, the eagle, with the star called Altair. This can easily be identified because it is flanked by two somewhat fainter stars named Alchain (toward the southern horizon) and Tarazed (above). Farther left from Aquila is Aquarius, the water-carrier, in which Mars is now found.

Below Aquarius we see Fomalhaut, a bright star in the constellation of Piscis Austrinus, the southern fish. This is about as high as this star ever climbs, in our latitudes, so it is not advantageously placed.

Above Aquarius stands Pegasus, the winged horse, in which there are four stars forming a group known as the "Great Square." The star in the upper left hand

corner, Alpheratz, is in the neighboring constellation of Andromeda.

Looking toward the northeast, we can see Capella, another star of the first magnitude, in Auriga, the charioteer. Immediately to the right of this group is part of Taurus, the bull, with ruddy Aldebaran.

Both Auriga and Taurus are among the brilliant array that shine so brightly in the south on winter nights, so their appearance tells us that season is not far away.

Mars sets well after midnight, but about the same time some other planets have risen in the east.

First comes Venus which, about Oct. 1, rises around 2:00 a.m., in the constellation of Leo, the lion. Of magnitude minus 3.6, it is even brighter than Mars.

Jupiter rises, on the first, about 4:00 a.m. and about 2:30 a.m. on the 31st.

Venus passes closer to Jupiter on the 25th so on that morning, as well as for a few mornings before and after, the two brilliant planets will form a beautiful pair.

Looking toward the northern sky, the familiar "great dipper," part of Ursa Major, the great bear, is seen near the horizon. Extending upwards from it, toward the left, is Draco, the dragon, which leads towards Vega, and also, still higher and to the right, to Cepheus. And to the right of this group is Cassiopeia, shaped like a letter W.

In the middle of this array, about halfway between Cepheus and the big dipper, is Ursa Minor, in which stands Polaris, the pole star.

Six months from now these constellations will still be visible in the northern evening sky, but their positions will be reversed. Ursa Major will be up where Cepheus is now, while Cepheus and Cassiopeia will be down near the horizon.

Draco will be farther right, but the pole star will still be in about the same position that it now occupies.

The reason is that the swinging of the stars around the sky is really due to the turning of the earth on its axis, from west to east, combined with its yearly movement about the sun. Every 24 hours the whole sky seems to turn around, but because the pole star is almost directly in line with the axis, it stays in the same place. In the same way, a wheel may spin, but the axle stays put.

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Unconstant Constant Symbol

On account of this, the pole star has become a symbol of constancy. In Julius Caesar, Shakespeare has Caesar say, just before he is stabbed: "I am constant as the northern star."

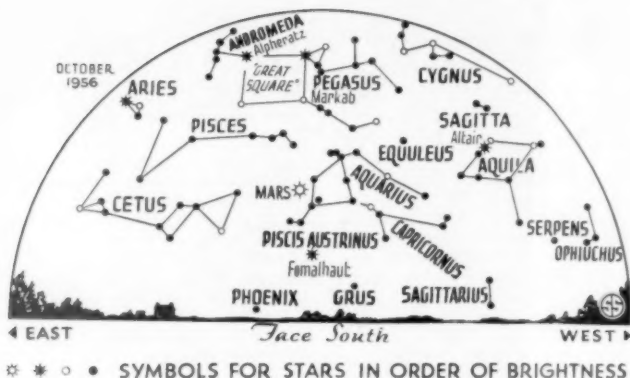
Actually, however, Polaris is not as constant as it might appear. In fact, it has not always been the pole star nor will it always remain so.

In ancient Egypt, when the pyramids were being built, this post of honor was occupied by Thuban, a star in Draco, which is indicated on our maps. And about the year 14,000 Vega, in Lyra, will be the pole star. Actually, Polaris is still moving closer to the pole, traveling about the diameter of the moon every century, and in the year 2102 it will be closest.

Aside from its motion, however, Polaris itself is not constant, as Elizabeth Roemer of the University of California points out in leaflet No. 328 of the Astronomical Society of the Pacific.

For one thing, Polaris is a variable star, of a type known as cepheid, which increases in brilliance rather quickly, and then more gradually dims to its former brightness. In





a period of about four days, it increases nearly 20% in its light.

In addition, like many of the orbs in the sky, Polaris is a double star. Even through a moderately large telescope there can be seen nearby a star of the ninth magnitude, too faint for the naked eye, which is really a companion. In a period of many thousands of years these revolve around each other.

Even this is not the whole story, for there is a third body that cannot be seen through any existing telescope. Its presence is revealed by the spectroscope, which shows the motion of Polaris as it waltzes around this companion, once in 30 years.

Thus it is known as a spectroscopic binary, one of many in the sky.

Truly, as Miss Roemer says, "the phrase, 'constant as the North Star' does not take into account either the precession of the equinoxes or the real character of Polaris."

Celestial Time Table for October

| Oct. | EST | |
|------|------------|--|
| 2 | 1:19 p.m. | Moon passes Jupiter. |
| 3 | 11:24 p.m. | New moon. |
| 7 | 2:58 p.m. | Moon passes Saturn. |
| 11 | 1:44 p.m. | Moon in first quarter. |
| | 9:00 p.m. | Mercury farthest west of sun, visible for a few days around this date low in east just before sunrise. |
| 12 | 6:00 p.m. | Moon farthest, distance 251,300 miles. |
| 16 | 10:29 a.m. | Moon passes Mars. |
| 19 | 12:24 p.m. | Full moon—Hunter's Moon. |
| 25 | 9:00 a.m. | Venus passes Jupiter. |
| 26 | 1:02 p.m. | Moon in last quarter. |
| 27 | 1:00 a.m. | Moon nearest, distance 230,000 miles. |
| 30 | 6:25 a.m. | Moon passes Jupiter. |
| | 3:45 p.m. | Moon passes Venus. |

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, September 22, 1956

HEMATOLOGY

Blood Plasma Treatment Dangerous to Bleeders

► A POTENTIAL HAZARD to bleeders suffering from the hereditary disease, hemophilia, exists in treatment with blood plasma, Dr. Martin C. Rosenthal of New York reported at the International Society of Hematology meeting in Boston.

The hazard is that they may become refractory to plasma so the treatment that once helped no longer does them any good. The reason is that, during the plasma treatment, they develop an anti-clotting substance, which binds the anti-hemophilic globulin in normal blood and plasma, thus keeping the plasma from being effective.

A lack of corrective effect from plasma was found in six out of 100 hemophilia victims. Apparently this was acquired and not part of the hereditary background. One patient in the course of a short period of intensive plasma treatment went from complete responsiveness to complete refractoriness. During the refractory state this patient developed the anti-clotting substance that Dr. Rosenthal believes causes the trouble in plasma refractoriness.

Science News Letter, September 22, 1956

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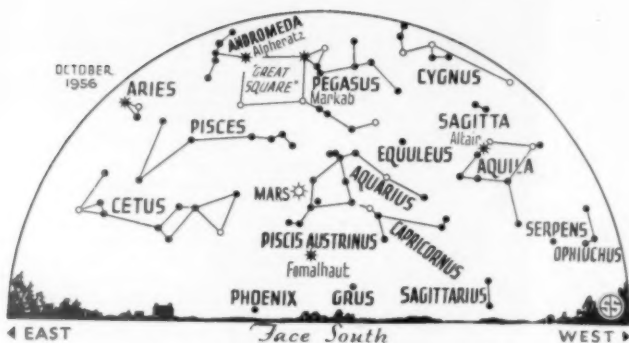
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a period of about four days, it increases nearly 20% in its light.

In addition, like many of the orbs in the sky, Polaris is a double star. Even through a moderately large telescope there can be seen nearby a star of the ninth magnitude, too faint for the naked eye, which is really a companion. In a period of many thousands of years these revolve around each other.

Even this is not the whole story, for there is a third body that cannot be seen through any existing telescope. Its presence is revealed by the spectroscope, which shows the motion of Polaris as it waltzes around this companion, once in 30 years.

Thus it is known as a spectroscopic binary, one of many in the sky.

Truly, as Miss Roemer says, "the phrase, 'constant as the North Star' does not take into account either the precession of the equinoxes or the real character of Polaris."

Celestial Time Table for October

| Oct. | EST | |
|------|------------|--|
| 2 | 1:19 p.m. | Moon passes Jupiter. |
| 3 | 11:24 p.m. | New moon. |
| 7 | 2:58 p.m. | Moon passes Saturn. |
| 11 | 1:44 p.m. | Moon in first quarter. |
| | 9:00 p.m. | Mercury farthest west of sun, visible for a few days around this date low in east just before sunrise. |
| 12 | 6:00 p.m. | Moon farthest, distance 251,300 miles. |
| 16 | 10:29 a.m. | Moon passes Mars. |
| 19 | 12:24 p.m. | Full moon—Hunter's Moon. |
| 25 | 9:00 a.m. | Venus passes Jupiter. |
| 26 | 1:02 p.m. | Moon in last quarter. |
| 27 | 1:00 a.m. | Moon nearest, distance 230,000 miles. |
| 30 | 6:25 a.m. | Moon passes Jupiter. |
| | 3:35 p.m. | Moon passes Venus. |

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, September 22, 1956

HEMATOLOGY

Blood Plasma Treatment Dangerous to Bleeders

► A POTENTIAL HAZARD to bleeders suffering from the hereditary disease, hemophilia, exists in treatment with blood plasma, Dr. Martin C. Rosenthal of New York reported at the International Society of Hematology meeting in Boston.

The hazard is that they may become refractory to plasma so the treatment that once helped no longer does them any good. The reason is that, during the plasma treatment, they develop an anti-clotting substance, which binds the anti-hemophilic globulin in normal blood and plasma, thus keeping the plasma from being effective.

A lack of corrective effect from plasma was found in six out of 100 hemophilia victims. Apparently this was acquired and not part of the hereditary background. One patient in the course of a short period of intensive plasma treatment went from complete responsiveness to complete refractoriness. During the refractory state this patient developed the anti-clotting substance that Dr. Rosenthal believes causes the trouble in plasma refractoriness.

Science News Letter, September 22, 1956

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Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed for convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

ABACS OR NOMOGRAMS: An Introduction to Their Theory and Construction Illustrated by Examples from Engineering and Physics—A. Giet, translated and revised by J. W. Head and H. D. Phippen—*Philosophical Library*, 225 p., \$12.00. The subject is explained in an elementary way in this book intended for practical engineers rather than mathematicians.

ASTRONOMY HANDBOOK—Leon A. Hausman—*Fawcett*, 144 p., illus., paper, 75 cents. A how-to-do-it book for the beginning star-gazer.

THE CHEMISTRY OF THE COORDINATION COMPOUNDS—John C. Bailar, Jr., Ed., and Daryle H. Busch, Ed. Asst.—*Reinhold*, 844 p., \$18.50. Werner's coordination theory might be said, the author points out, to underlie our modern concepts of molecular structure.

THE CONDENSED CHEMICAL DICTIONARY: A Reference Volume for All Requiring Quick Access to Essential Data Regarding Chemicals and Other Substances Used in Manufacturing and Research, and to Terms in General Use in Chemistry and the Process Industries—Francis M. Turner, completely revised and enlarged by Arthur and Elizabeth Rose—*Reinhold*, 5th ed., 1200 p., \$12.50. Containing over 30,000 entries.

DEFECTS IN CRYSTALLINE SOLIDS: Report of the Conference Held at the H. H. Wills Physical Laboratory, University of Bristol, July 1954—N. Bloembergen and others—*The Physical Society*, 429 p., illus., paper, \$6.00. Describing defects, especially dislocations and point defects, and new experimental methods of investigating their properties.

THE DYNAMICS OF AGING—Ethel Sabin Smith—*Norton*, 191 p., \$2.95. A book on "how to grow old" directed for the most part to those who are still young.

ENCOURAGING SCIENTIFIC TALENT: A Study of America's Able Students Who Are Lost to College and of Ways of Attracting Them to College and Science Careers—Charles C. Cole Jr.—*College Entrance Examination Board*, 259 p., paper, \$3.50. Reporting a study made by the Board at the request and with the support of the National Science Foundation. Includes discussion of the Science Talent Search and the Science Clubs of America.

EXPLORING THE DEEP PACIFIC—Helen Raitt, introduction by Roger Revelle—*Norton*, 272 p.,

illus., \$3.75. An unofficial account, which has the flavor of an adventure story, of an oceanographic expedition in the South Pacific.

FAMILY MEDICAL COSTS AND VOLUNTARY HEALTH INSURANCE: A Nationwide Survey—Odin W. Anderson with Jacob J. Feldman—*Blakiston, McGraw-Hill*, 251 p., illus., \$6.50. Based on a survey of 2,800 families interviewed in their homes. More than 100,000,000 persons, 61% of the population, are enrolled in health insurance plans.

THE FIRST BOOK OF THE WEST INDIES—Langston Hughes—*Franklin Watts*, 63 p., illus., \$1.95. Introducing children to some of our near neighbors.

FROGS AND POLLIWOGS—Dorothy Childs Hogner—*Crowell*, 68 p., illus., \$2.50. Natural history for children.

HANDBOOK OF SCIENTIFIC INSTRUMENTS AND APPARATUS 1956—*The Physical Society*, 257 p., illus., paper, \$1.00. This list of apparatus was published in connection with the 40th Physical Society Exhibition held in London, May 14-17.

HOW TO MAKE AND USE A TELESCOPE—H. Percy Wilkins and Patrick Moore—*Norton*, 196 p., illus., \$2.95. An authoritative how-to-do-it book for amateur astronomers.

INTRODUCTORY PSYCHOSOMATIC DENTISTRY—John H. Manhold, Jr.—*Appleton-Century-Crofts*, 193 p., \$5.00. The author presents evidence for his view that dental decay, although apparently so objective, is nevertheless linked with personality makeup.

THE INTERNATIONAL DICTIONARY OF PHYSICS AND ELECTRONICS—Walter C. Michels and others, Eds.—Van Nostrand, 1004 p., illus., \$20.00. Prepared by an international group of scientists and educators, the dictionary is nevertheless in English only.

JOINT SPACING IN CONCRETE PAVEMENTS: 10-Year Reports on Six Experimental Projects—Earl C. Sutherland and others—*Highway Research Board*, Research Report 17-B, 159 p., illus., paper, \$2.70. Today practically every state has eliminated expansion joints in non-reinforced concrete pavements except at structures and other special locations.

LEARNING AND INSTINCT IN ANIMALS—W. H. Thorpe—*Harvard University Press*, 493 p., illus.,

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THE MAKERS OF HONEY—Mary Geisler Phillips—*Crowell*, 163 p., illus., with drawings by Elizabeth Burckmyer, \$2.50. Interesting information about the lives of bees.

MICKY'S MAGNET—Franklyn M. Branley and Eleanor K. Vaughan—*Crowell*, illus., with drawings by Crockett Johnson, \$2.50. Telling young children of interesting experiments with a horseshoe magnet.

NATURE'S GUARDIANS: Your Career in Conservation—Harry Edward Neal—*Messner*, 192 p., illus., \$3.50. A guide to the occupation of conservation for high-school students.

ORGANIZATION OF THE FEDERAL GOVERNMENT FOR SCIENTIFIC ACTIVITIES—John C. Honey and others—*Govt. Printing Office*, 349 p., illus., \$1.75. (See p. 184).

OUR AMERICAN TREES—Ruth H. Dudley—*Crowell*, 147 p., illus., with drawings by Nils Hogner, \$2.50. A descriptive book about the trees and forests of the United States, including an account of the biggest, smallest and other unusual trees.

THE PHYSICS OF THE IONOSPHERE: Report of the Physical Society Conference Held at the Cavendish Laboratory, Cambridge, Sept., 1954—A. H. Waynick and others—*The Physical Society*, 406 p., illus., paper, \$6.00.

PROCESS CHEMISTRY—F. R. Bruce, J. M. Fletcher, H. H. Hyman and J. J. Katz, Eds.—*McGraw-Hill*, Progress in Nuclear Energy, Series III, 407 p., illus., \$12.00. Reference material for those actively engaged in the chemical aspects of atomic energy.

SELECTED BIBLIOGRAPHY ON BUILDING CONSTRUCTION AND MAINTENANCE—Edith R. Meggers—*Govt. Printing Office*, National Bureau of Standards Building Materials and Structures Report 140, 2d ed., 40 p., paper, 30 cents.

THE STORY OF CAVES—Dorothy Sterling—*Doubleday*, 121 p., illus., with drawings by Winifred Lubell, \$3.00. Telling how caves are formed, what to see in them, the kinds of life they shelter, and archaeological evidences of prehistoric peoples to be found there.

THEIR MOTHERS' DAUGHTERS—Edward A. Strecker and Vincent T. Lathbury—*Lippincott*, 256 p., \$3.75. The author of "Their Mothers' Sons" here writes of daughters who may also be kept tied to mom's apron strings.

Science News Letter, September 22, 1956

MATH IS FUN

By Joseph Degrazia, Ph.D.

Here is a treasury of brain-teasers. You need not be a mathematical genius to solve these problems and puzzles. What you need is to know how to THINK LOGICALLY—how to REASON. This is practically a "course" in applied logic and reasoning—besides being an immense amount of fun that will keep you absorbed for many hours. You will find not only that MATH IS FUN, but also that learning math can be fun!

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BIOCHEMISTRY

Drugs Tranquelize Fighting Fish

► SIAMESE FIGHTING FISH will not fight when under the influence of the tranquilizing drugs. When given reserpine and Meproamate, they not only will not fight but retreat, usually backward. (See SNL, Sept. 15, p. 167.)

Given another tranquilizer, chlorpromazine, the fighting fish are quiet, not even swimming about, until attacked by other fish, whereupon they also refuse to fight and swim away.

Antihistaminic drugs make the fish turn pale and try to escape from other fish so violently they almost jump out of the tank.

Barbiturate sleeping drugs depress the fish, but they will fight when goaded. Morphine and aspirin excite them slightly and, under the influence of these two, the fish are very aggressive and fight.

The Siamese fighting fish studies, which suggest that these aquatic animals might be good guinea pigs for testing various drugs that affect the nervous system, are reported by Drs. E. J. Walaszek and L. G. Aboud of the University of Illinois College of Medicine, Chicago, in *Science* (Sept. 7).

Science News Letter, September 22, 1956

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Do You Know?

An Australian whaling company has made arrangements to sell *whale meat* to a U. S. firm making pet foods.

Spraying vegetable beds with one pound of carbon black to three gallons of water increases daylight *soil temperatures* by seven degrees.

Since the introduction of DDT spraying, annual cases of *malaria* in the Mediterranean region of southern Europe have been reduced from 4,000,000 to less than 10,000.

The first *hay fever* symptoms were described by physicians in Greece five centuries before Christ.

Florida is covered by some 25,000 plastic traps from the Keys north almost to the Georgia line; they are baited with oil of angelica seed, a strong attractant for male *Medflies*.

TECHNOLOGY

Diamonds Studied In College Course

DIAMONDS are being studied at the Illinois Institute of Technology in Chicago this fall. The precious stones are not primarily jewels, but diamonds used for cutting, sawing and boring because of their great hardness.

The class will be devoted to the preparation and use of diamonds as industrial tools.

Science News Letter, September 22, 1956

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PEDIATRICS

Solid Food Fed to Babies Few Days Old

SOME 600 BABIES have now done well after being put on solid foods and a six-hour feeding schedule within two to three days after birth, Dr. Walter W. Sackett Jr. of Miami reports.

The babies are started on cereal of a putty-like consistency, from a spoon, plus breast or bottle milk. At 10 days of age, baby begins to get strained vegetables. By the time he is nine weeks old, he is eating these plus such foods as eggs, soups, mashed bananas, custard puddings and crisp bacon.

Bedtime bottle or feeding is discouraged and, by the time baby is 17 days old, he can be put on a breakfast, lunch and dinner schedule. Before he is a year old, he can eat almost entirely from the table with the family.

Dr. Sackett believes babies fed this way grow up with fewer eating problems. He finds they develop normally and that the schedule makes for a happier family adjustment.

He reports on his five years' experience with this method in *GP* (Sept.).

Science News Letter, September 22, 1956

Questions

ASTRONOMY—What are the three phases of the optical tracking program for earth satellites? p. 180.

☐ ☐ ☐

BIOPHYSICS—What kind of stitches are being used to check bladder cancer? p. 184.

☐ ☐ ☐

BOTANY—How can the taro plant help trace the origins of Polynesian people? p. 185.

☐ ☐ ☐

GEOPHYSICS—When did the present sunspot cycle start? p. 180. How strong is the sun's magnetic field? p. 181.

☐ ☐ ☐

HEMATOLOGY—How can fatal maternal bleeding be prevented? p. 185.

☐ ☐ ☐

PHYSIOLOGY—What is the danger involved in determining the sex of an unborn baby? p. 182.

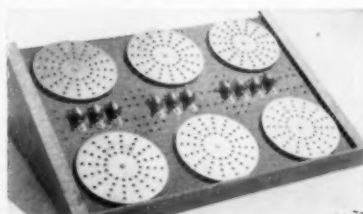
☐ ☐ ☐

SURGERY—At what age can babies be fitted with artificial limbs? p. 182.

☐ ☐ ☐

PHOTOGRAPHS: Cover, U. S. Navy; p. 179, U. S. Weather Bureau; p. 181, General Electric Research Laboratory; p. 182, Jules Schick; p. 183, University of Pennsylvania; p. 192, Bakelite Company.

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Science News Letter, September 22, 1956

PLASTIC STEEL for all types of repairs hardens to a rigid steel-like mass in two hours after the addition of a hardening agent. Made of 20% plastic and 80% steel, the mixture bonds itself to aluminum, bronze, brass, iron, wood, glass, concrete and other surfaces.

Science News Letter, September 22, 1956

ELECTRONIC ALARM to ward off burglars employs an infrared modulated light. Two cones are used, one giving off "black" light at a specified number of cycles per second and the second receiving the signal. Any body passing through the invisible beam trips off the alarm. The system operates on 110-volt, 60-cycle electrical supply.

Science News Letter, September 22, 1956

TELEPHONE LISTING PAD is a slide-out index designed to be attached underneath the telephone itself, as shown in the photograph. Made of a plastic vinyl sheet, the index has space for up to 200



names and numbers. Only a small black tab shows in front of the telephone when the index is not in use. A clear plastic overlay protects the names and numbers.

Science News Letter, September 22, 1956

WALL TILES in a wide variety of colors, textures and patterns have decorating materials laminated between plastic vinyl

sheets. The ten-inch square tiles resist grease, oils, chemicals, water and household stains. Easily washed with a detergent, the sheet tiles do not shrink, fade or peel.

Science News Letter, September 22, 1956

SKILLET-GRILL for the kitchen grills and broils on one side and bakes and fries on the other. The double-surface cooker is made of heavy cast aluminum and has a cooking area ten and one-half inches square. Heat settings for different foods are imbedded in the plastic handle.

Science News Letter, September 22, 1956

MOTOR SCOOTER of British design and construction has a single-cylinder air-cooled 125-cc engine and is enclosed in a one-piece pressed-steel body. With a maximum speed of 45 m.p.h., the scooter has a cruising speed of 35 m.p.h. A twist-grip gear-shift for heavy traffic and a clutch needed only to start in first gear are other innovations.

Science News Letter, September 22, 1956

FIRST AID STATION specially designed for factories and laboratories has doors fitted with positive-action catches that do not open as a result of nearby vibration. The cabinet is white and measures 20 inches by 24 inches by 11 inches deep. It is available completely stocked or empty.

Science News Letter, September 22, 1956



Nature Ramblings



By HORACE LOFTIN

▶ A GREAT "OCEAN RIVER," some 500 miles wide, flows up the western coast of South America, bringing a constant mass of cold water from the Antarctic almost to the equator.

Marine life abounds in astonishing amounts in this cool "ocean river," the Humboldt Current, making the ocean off Peru one of the richest fishing areas in the world. Myriads of sea birds make their living from this abundant sea life, and their gigantic colonies have built up the famous guano deposits of Peru.

So in the cool Humboldt Current, fishes multiply, sea birds fatten and fishermen prosper—until a strange thing happens.

Almost overnight, death may take over the abounding sea life off Peruvian coastal waters. There may be so many dead and decomposing fish covering the water that the sea and air becomes foul. The guano-

The Callao Painter



producing sea birds begin to die off or abandon the guano islands.

The paint of ships passing through the devastated region may suddenly become blackened—and so this phenomenon is called the "Callao Painter," for the famous Peruvian port.

What has happened?

When it is winter below the equator (and summer above it), a current of warm

water from the north begins to flow towards the equator. Usually it flows only as far as the coast of Ecuador, but occasionally it goes farther south till it mingles with the Humboldt Current off Peru.

When this happens, then the "Callao Painter" may strike. The substitution of warm water has a disastrous effect on the marine life, accustomed to existence in a cool environment. Those creatures that cannot survive the sudden change perish, and the "Callao Painter" takes over.

The blackening effect of the "Callao Painter" is due to a gas, hydrogen sulfide, which is created by the decomposition of dead marine life.

The lethal effect of sudden changes of temperature on many fishes can be illustrated by cases somewhat closer to home.

It has been found, for example, that a vital substance of the cod albumen is coagulated at the temperature of the Gulf Stream off the coast of Florida!

Science News Letter, September 22, 1956